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AUTHOR Lenning, Oscar T.
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ABSTRACT

This study was an exploratory attempt to relate educational growth in college with factors which the student brings with him into the college situation, as distinguished from relating educational growth to actual collegiate experiences. Educational growth was operationally defined as estimated true test-retest change on the American College Testing (ACT) Program Composite scores. Two estimates were made for each student. One utilized Lord's "best estimate" method, the other, a "base-free" method presented by Tucker, Damarin and Messick. Considerable and varied data were available for the entire sample of 799 freshmen at one college. The method used for the study included an analytic control for sex difference. Results pointed up significant variables for the total group, as well as for men only and women only. An emphasis on studying the sexes separately and a reaffirmation of the potential fruitfulness of research on this topic concluded the study. (TL)

STUDENT FACTORS RELATED TO EDUCATIONAL GROWTH[1] AT A CHURCH-RELATED LIBERAL ARTS COLLEGE

Oscar T. Lenning
American College Testing Program

This study was an exploratory investigation of student factors related to educational growth in college. Test-retest studies of educational growth have concentrated on the effects of collegiate experiences, and have ignored the effects of factors that the student brings into the college situation with him. Yet, such factors may largely determine what college experiences would be most effective in bringing about the desired change for individual students. It was hoped that the present exploratory study would stimulate research on this topic and would suggest variables for future research.

Criterion

Since the American College Tests (ACT) measure basic skills necessary for success in college (American College Testing Program,

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[1] Paper prepared for presentation at the 1969 annual meeting of the American Educational Research Association, March 6, 1970, Minneapolis, Minnesota. The author is deeply indebted to Luther A. Marsh and Abilene Christian College for sharing their raw data with him so that he could conduct this study. For a more comprehensive report of this as well as a related study investigating those students who decreased on retest, see Lenning (1969).

1965)[2], and since most educators would like to see students improve in these skills, educational growth was operationally defined for the study as estimated true test-retest change on ACT Composite score. Two of these estimates were made for each student in the sample; with the students having been retested after one year of college. One was developed by using a "best estimate" method first presented by Lord (1956). The other estimate was developed by using a "base-free" method presented by Tucker, Damarin, and Messick (1966). Growth scores using Lord's method were needed for a related investigation comparing "negative growth students" to "positive growth students" of equal initial ability. Since results for both measures were similar, and since Lord (1963, p. 33) did not recommend his change scores for use in correlational analyses, our attention will be focused exclusively on the Tucker, et. al., measure which we shall call "independent educational growth."

An earlier pilot study involving students at five colleges (Lenning, Munday, and Maxey, 1968) had indicated that in general there are statistically significant mean gains on ACT retest after one or two years of college. However, there was a wide variation among students on amount of test-retest growth, and a number of students actually went down on retest as is indicated in Table 1. Some of this was undoubtedly caused

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[2] The American College Tests emphasize such skills as the ability to handle algebraic manipulations, to analyze and solve problems, to make inferences, to think critically, to use language effectively, to read with comprehension, to recognize writers' styles and biases, and to apply reading to new situations. How the student can apply his knowledge is emphasized, rather than the knowledge of detailed subject matter.

by regression and ceiling effects, but it was clear that other factors were of major importance.

Insert Table 1 about here

Although the Lenning, et. al., study was primarily concerned with the relationship of ACT score change in different subject areas (there are four ACT subtests: English, Mathematics, Social Studies, and Natural Science) to amount of coursework taken in the appropriate area, two findings are applicable to the present study. One of these findings was that there were significant differences between males and females on some of the change measures. Secondly, there were significant institutional differences that could not be accounted for by regression and ceiling effects. For example, the college with the highest initial score means for all subtests exhibited more gain on the ACT Social Studies and Natural Sciences tests than did any of the other colleges. If it were not for ceiling and regression effects, this difference in gain would have been even more marked. In contrast, less gain on the English test was present for this college than for any other.

Predictors

A large variety of data were available for students in the study. Included were standardized measures of opinions, attitudes, aptitudes, achievement, study habits, critical thinking, and personality. Several

social, demographic, and personal self-report questionnaires had also been completed by the students. A description of all of the assessment devices used is included in the testing project manual (Marsh, 1969). A copy of the Marsh manual is included in the original comprehensive report of this study (Lenning, 1969). Instruments used included the following:

College Student Opinion Survey (pretest and posttest)
ETS IRPHE College Student Questionnaires (pretest and posttest forms)
College and University Environment Scales (pretest and posttest)
California Test of Mental Maturity (pretest)
CEEB English Composition Test (pretest)
Nelson-Denny Reading Test (pretest)
Brown-Holtzman Survey of Study Habits and Attitudes (pretest)
Watson-Glaser Critical Thinking Appraisal (pretest)
California Personality Inventory (posttest)
Sixteen Personality Factor Questionnaire (pretest)
Rokeach Authoritarianism Scale (posttest)
Rokeach Dogmatism Scale (posttest)
Eight scales of Minnesota Multiphasic Personality Inventory (posttest)
Marsh Social and Demographic Questionnaire (pretest)
ACT Student Profile Section college goals scales (pretest and posttest)
Special questionnaire utilizing several scales being developed for the ACT Institutional Self-Study Survey instrument (posttest)

Sample

Since the present study was completely exploratory and was to examine a large number of independent variables, and since the previous study (Lenning, et. al., 1969) had indicated definite institutional differences,

it was considered desirable to study students at only one institution. Later studies could explore other campus settings and groups of similar colleges. Therefore, the study was limited to one rather homogeneous student body.

The sample for the study consisted of the 1967-68 freshmen at a church-related liberal arts college in the southwestern United States. Primary reasons for choosing this particular college were the availability of a variety of data, an adequate sample size, and the willingness of institutional officials to cooperate. Also, findings of the previous study had suggested that a larger percentage of "negative growth" students might be found at a church-related college similar to the one selected (see Table 1). In addition, it was felt that a liberal arts college would have more similarity among freshmen on curricular coursework taken.

Most of the 799 students in the sample took the ACT examination initially during their senior year in high school. In May of their college freshman year, 646 of the students were retested with an equivalent form of the ACT. Of the students who did not take the retest, many had dropped from school in the interim and other students did not take the retest for various reasons.

It should be pointed out that all ACT pretest scores were adjusted to a point that is considered (based on past experience) to be equivalent to November of the senior year in high school. This is a routine procedure

of the ACT Program so that students taking the test battery at a later date will not have an advantage over students taking it later on. The retest scores were adjusted downward exactly the same amount as the adjustment made for pretest scores obtained during college freshman registration week, so the observed change from pretest to posttest could conceivably be considered to be the change that took place during the period of college attendance.

Method

To control for sex difference, all analyses of the total sample were also conducted separately for each sex. Zero-order correlations were computed between each predictor and the criterion, and stepwise multiple regression analyses were conducted to see which variables would contribute a significant amount of unique variance for predicting independent educational growth. Since so many predictor variables were being considered, a large number of separate computer runs were made to keep the statistical power within an acceptable range. Heeding an empirical finding by Halinski (1968), the ratio of sample size to the number of predictors being examined was kept above 20:1.

Since the computer program available had no missing-data provisions, and in order to have the N-count as large as possible for each computer run, which variables were included together in a run was determined by which instruments were given to the same students to the largest extent.

After all of the predictors had been included in a stepwise regression computer run, all variables found to be significant were analyzed together as a single group. N-counts were lower for the final computer runs than for the preliminary runs because only those students with data available for all predictors under study could be included in the final regression analyses. In all cases, including the preliminary computer runs, an F-value of 3.84 (α = .05) was used as the threshold value for inclusion in the multiple regression equation.

Results

Zero-order correlations between each predictor variable and independent educational growth are shown in Tables 2 and 5 for men, in Tables 3 and 6 for women, and in Tables 4 and 7 for the total group of students. A large number of the correlations were significantly different from zero at the P = .05 level using a one-tailed test. Examination of the tables reveals that of the 196 predictor variables examined, 82 of them for men, 45 of them for women, and 92 of them for the total group were significant at the P = .05 level. It should be noted that there were large sex differences in the results, and some variables that had a significant relationship to independent educational growth for the total group did not have such a significant relationship for either sex. Also, many of the significant correlations were very

small, but were significant from zero because of the relatively large sample size (over 600 students).

Insert Tables 2-7 about here

Concerning the preliminary stepwise regression analyses, 49 of the predictor variables accounted for significant ($P \leq .05$) unique variance in the prediction of the criterion for either sex and/or for the total group. Of these variables, 27 were significant for men, 20 for women, and 32 for the total group. The variables significant for the total group are shown in Table 8.

Insert Table 8 about here

Seven variables made a significant contribution to prediction for the total group but not for men and women: expected income ten years after college, nonconventional (idealism) posttest college goals, and Marsh Social and Demographic pretest Item 17 (whether has a car on campus), 34 (father's occupational level), 23 (percent of college expenses expect to earn), 22 (how often he reads the Bible), and 54 (income to live as would like). Eight variables were significant for men but not for the women or total group: 16PF pretest Dependence and Creativity, CSQ pretest Peer Independence, CUES pretest and posttest Practicality, CUES posttest Community, posttest importance of Academic College Goals, and Marsh Social and Demographic pretest Items 56

(attitude towards dancing) and 68 (life goals). Nine variables were significant for women but not for men or the total group: Watson-Glaser Interpretation, CEEB English Composition Test, CSOS pretest Negative Orientation to Society, CUES posttest Propriety, CSQ Extra-curricular Involvement, number of out-of-class social studies activities, and Marsh Social and Demographic Items 24 (grades expected), 61 (attitudes towards cribbing), and 77 (attitudes towards marriage and divorce).

Only four variables were significant for men, women, and the total group. Those variables were CSQ Satisfaction with Students, Watson-Glaser Total (which does not tell anything about the pattern on Watson-Glaser subscores), reported satisfaction with the college, and problem in developing an understanding and an appreciation of science and technology.

When all significant variables for men, women, and total group were analyzed together in the final analyses, six contributed a significant amount of unique variance for men, six for women, and seven for the total group. The results for the total group are shown in Table 9. The significant variables for men listed in the order of unique contributions made to the prediction are: CSQ posttest Social Conscience, CSQ pretest Peer Independence, CSQ Satisfaction with Administration, CPI Tolerance, CSQ Extracurricular Involvement, and the Marsh Social and Demographic item dealing with dating or marital status. For women,

CSQ Satisfaction with Administration was the first variable entered into the equation, because it had the largest zero-order correlation with the criterion. However, it was later deleted from the equation because it did not provide significant unique variance. The significant variables for women were: Watson-Glaser pretest Interpretation, CSOS Negative Orientation to Society, reported satisfaction with college, progress in developing an understanding and an appreciation of science and technology, out-of-class social studies activities, and CSQ Study Habits. The significant variables for the total group were: CSQ Satisfaction with Administration, CSQ pretest Social Conscience, CSQ Satisfaction with Students, CSQ pretest Peer Independence, progress in developing an understanding and an appreciation of science and technology, CPI Tolerance, and Watson-Glaser pretest Interpretation.

Insert Table 9 about here

Conclusion

In the present study, motivation, habits, attitudes, self-concept, hostility, conformity, religious background and orientation, family relations and background, social relations, and certain personality characteristics were related to educational growth as operationally defined. They would seem to have just as much theoretical justification for predicting educational growth in other college settings.

Therefore, any one of these variables could be considered as prime candidates for predictors in similar studies involving other college settings and populations.

In lieu of the unique nature of the population for the present study, it would be folly to try to generalize about students in general, or even about church related liberal arts colleges in general . Perhaps such generalizations to larger student populations will be possible if a number of similar studies with fewer variables under investigation at one time are conducted in the future. It is possible that unique and similar patterns (for the various types of colleges) that unfold as a number of studies are completed could lead to a theory of educational growth in college students that would be meaningful for instructional, counseling, advising, program planning, and other purposes.

The present study demonstrates once again the importance of studying the sexes separately. In the final regression analyses, no predictor contributed unique variance to the prediction for both men and women. Even so, it appears that the patterns for the two sexes are similar in that both imply greater educational growth for students whom the college officials would view in a more positive light.

Indications are that the freshman men at this college who exhibit more educational growth would tend to be more concerned, than those exhibiting less educational growth about perceived social injustice and institutional wrongdoing, would tend to be less conforming and not so concerned about how their behavior appears to other students, and would

be more satisfied with the administration and with the rules and regulations of the college. Also, they would tend to be more tolerant of others, to participate more actively in organized extracurricular activities, and fewer of them would be going steady with a girl, or be pinned or engaged.

Concerning freshman women at this college, it would appear that those exhibiting more educational growth would tend to be more satisfied with college overall, would tend to be more optomistic and positive about society, and would feel that they have made more progress during college in developing an understanding and appreciation of science and technology. They would also tend to be involved in more out-of-class social studies activities, to have greater facility for interpretational aspects of critical thinking, and to exert more effort, and be more systematic and perserver-ing, in their studies.

There are several obvious limitations to the present study. The limited and unique population under study has already been mentioned. Secondly is the acknowledged unreliability of change scores. Adjusting the observed change to estimated true change raised the reliability figure to .72, which is about as good as you can expect for a measure of change, but the same trust still cannot be placed in these change scores as in standard scores of an aptitude test with reliability above .90. Never-theless, the reliability was certainly high enough for the adjusted scores to be worthy of analysis.

A third limitation is that the motivational and anxiety conditions were different for the pretest than for the posttest. The pretest was for

college entrance and the students had much more at stake than during the retest, which they knew was for research purposes. There is the possibility that anxiety and motivational changes may cancel each other out, however, because French (1962) gave an equivalent form of the SAT to half of his group of students a few days before and to the other half a few days after they took the SAT for college entrance. At the beginning of the research period, the students were told that it was for research purposes only. They were also told that the scores would not be reported to any college, but that the scores would be reported to their high schools. French concluded from his results that the hypothesis of anxiety reducing the validity of the test "was not borne out."

Just what effects motivational and anxiety differences between pretest and posttest had on the results of the study are unanswered. However, the possibility of such effects stresses that future studies of such educational growth should take precautions to equalize pretest and posttest motivational and anxiety conditions. Another factor in the present study is that a very large amount of data was being collected from students at one time, and particularly during the posttest. This could also have motivational effects.

In summary, the current study has demonstrated the potential "fruitfulness" of conducting research on student factors related to educational growth in college students. Such research has been neglected in the past. Research on educational growth in many diverse campus settings is needed.

Finally, new predictors such as interest scales need to be explored. Although the predictors used in the present study, and particularly the ETS College Student Questionnaires, seemed to have much merit for exploration, all of the variables actually accounted for only a very small portion of the educational growth variance. In addition, it is important that educational growth be explored in terms of other meaningful operational definitions. "Educational growth" is a term that undoubtedly has different meanings to different people in higher education.

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Table 1

FREQUENCY DISTRIBUTIONS OF OBSERVED ACT CHANGE SCORES AT FIVE DIFFERENT COLLEGES

SCORE	Church Lib. Arts College	State Junior College	State Teachers College	State College	State University	SCORE
+9			2	1	1	+9
+9			1	1	1	+9
+8			2	1	1	+8
+7			4	2	3	+7
+6	2	1	8	2	6	+6
+5	5	5	11	10	16	+5
+4	6	6	19	17	28	+4
+3	23	9	33	32	39	+3
+2	25	9	46	45	44	+2
+1	52	10	32	37	35	+1
0	36	12	27	27	24	0
-1	26	5	21	24	25	-1
-2	13	7	17	16	9	-2
-3	8	0	4	7	2	-3
-4	3	2	2	1	1	-4
-5	1	2	1	3	1	-5
-6			0	1		-6
-7			0	0		-7
-8			0	1		-8
-9			1			-9
% Increasing	57	59	70	65	74	
% Decreasing	26	24	19	23	16	
Sample Size	200	68	240	228	236	

TABLE 2

CORRELATIONS OF PREDICTOR SCORES WITH EDUCATIONAL GROWTH FOR MEN

Predictor	Mean	S.D.	r with Independent Growth
CSOS PRETEST (N=295)			
Polit-Econ Conservatism	12.5	1.9	-.00
Dogmatism	35.2	4.2	.02
Intolerance of Negro	19.9	6.6	-.02
Neg Orient to Society	10.2	2.8	-.07
Relig Fundamentalism	14.4	0.9	.15**
CSOS POSTTEST (N=312)			
Polit-Econ Conservatism	11.5	2.3	-.03
Dogmatism	34.4	5.9	.08
Intolerance of Negro	20.3	7.7	-.06
Neg Orient to Society	11.4	5.5	-.04
Relig Fundamentalism	14.4	5.0	.03
ETS CSQ PRETEST (N=295)			
Motivation for Grades	24.4	5.4	.11*
Family Status	37.4	10.6	-.00
Family Independence	19.9	4.4	-.00
Peer Independence	22.8	4.0	.17**
Liberalism	22.5	3.9	.02
Social Conscience	27.6	4.8	.21**
Cultural Sophistication	20.5	5.0	.10*
ETS CSQ POSTTEST (N=312)			
Control Test	18.5	5.1	.16**
Family Independence	20.6	5.3	-.12*
Peer Independence	23.0	4.6	.00
Liberalism	23.2	4.6	.07
Social Conscience	27.2	5.6	.27**
Cultural Sophistication	20.9	5.4	.06
Satisfact with Faculty	26.5	5.2	.19**
Satisfaction with Admin	22.4	6.4	.16**
Satisfaction with Major	7.3	12.5	-.01
Satisfaction with Students	27.4	4.4	.20**
Study Habits	24.5	4.5	.08
Extra Curric Involvement	21.3	6.1	.10*

TABLE 2 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
CUES PRETEST (N=295)			
Practicality	19.1	2.6	-.08
Community	24.5	3.0	.09
Awareness	20.5	5.6	.06
Propriety	21.6	3.5	.14**
Scholarship	23.1	3.9	.11*
CUES POSTTEST (N=311)			
Practicality	19.2	5.4	-.01
Community	21.0	4.6	.16**
Awareness	14.4	7.3	.05
Propriety	18.6	5.3	.09
Scholarship	15.6	6.2	.06
CTMM (N=315)			
Logical Reasoning	31.0	4.9	.17**
Numerical Reasoning	17.5	4.3	.07
Verbal Concepts	17.5	4.3	.11*
Memory	19.4	3.3	.16**
Language IQ	61.0	12.1	.15**
Non-Language IQ	59.1	12.7	.14**
Total IQ	63.1	12.1	.17**
ENGLISH COMP TEST (N=310)	459.3	98.4	.14**
N-D READING (N=310)			
Vocabulary	43.0	13.4	.13*
Comprehension	47.1	11.0	.13*
Total	90.1	22.6	.14**
Reading Rate	311.4	94.2	.02
STANDARDIZED BIBLE CONTENT TEST			
Pretest Total (N=310)	59.3	20.4	.12*
Posttest Total (N=312)	72.0	26.2	.15**
SSHA (N=310)			
Delay Avoidance	22.0	9.3	.07
Work Methods	24.6	9.2	.07
Study Habits	46.5	16.9	.08
Teacher Acceptance	32.0	8.4	.12*

TABLE 2 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
Education Acceptance	29.4	7.2	.17**
Study Attitudes	61.4	14.5	.15**
Study Orientation	107.9	28.2	.13*
WATSON-GLASER CTA PRETEST (N=310)			
Inference	11.6	2.7	.17**
Recognition of Assumption	11.2	3.8	.08
Deduction	18.6	3.3	.17**
Interpretation	18.6	2.8	.15**
Evaluation of Arguments	10.2	1.8	.10*
Total	70.2	9.4	.21**
WATSON-GLASER POSTTEST (N=312)			
Inference	11.1	2.9	.16**
Recognition of Assumption	12.0	3.4	.07
Deduction	19.0	3.5	.17**
Interpretation	18.5	3.3	.14**
Evaluation of Arguments	10.3	2.0	.08
Total	70.8	10.9	.18**
CPI (N=311)			
Femininity	47.5	9.7	.01
Flexibility	48.0	11.3	.06
Self-Control	41.4	9.9	.09
Responsibility	43.6	11.4	.28**
Tolerance	41.5	10.9	.14**
MMPI (N=311)			
Lie	49.2	7.2	.03
Deviant	60.0	13.6	-.20**
Denial	51.7	8.3	.04
Psychopathic Deviate	59.9	11.4	-.16**
Masculinity-Femininity	58.8	10.6	.07
Paranoia	55.1	10.8	-.14**
Social Introversion	53.6	9.8	-.07
ROKEACH SCALES (N=311)			
Authoritarianism	94.9	13.5	-.07
Dogmatism	127.8	16.3	-.03

TABLE 2 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
16 PF (N=315)			
Reserved--Outgoing	55.4	21.2	-.05
Less Intel--More Intel	55.0	20.3	.14**
Feelings--Emotion Stable	55.2	21.2	-.02
Humble--Assertive	51.5	20.6	-.06
Sober--Happy-Go-Lucky	60.3	21.7	-.10*
Expedient--Proper	64.9	20.6	.16**
Shy--Venturesome	53.3	22.2	-.03
Tough-mind--Tender-Mind	59.4	19.8	.10*
Trusting--Suspicious	56.6	20.0	-.07
Practical--Imaginative	57.1	19.9	.07
Forthright--Shrewd	50.8	19.7	.00
Placid--Apprehensive	56.4	19.8	.01
Conservative--Experiment	49.6	20.3	-.05
Group-Dep--Self-Suffic	57.9	19.9	.03
Casual--Controlled	58.1	20.5	-.01
Relaxed--Tense	55.1	20.2	.02
Extroversion--Introvers	55.1	23.7	-.07
Anxiety--Adjustment	55.8	21.4	-.00
Alert Poise--Responsive	52.1	19.3	-.09
Independence--Subdueness	51.5	20.0	-.03
Neurotic Trend	54.7	22.6	.06
Leadership	56.8	21.7	-.01
Creativity	54.6	21.1	.13*
ACT PRETEST SPS GOALS SCALES (N=295)			
Academic Goals	6.4	1.6	.08
Vocational Goals	7.1	1.7	.01
Social Goals	5.8	2.0	.01
Nonconventional Goals	5.4	2.1	-.01

TABLE 2 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
ACT POSTTEST SPS GOALS SCALES (N=315)			
Academic Goals	2.6	1.6	.17**
Vocational Goals	2.8	1.5	.03
Social Goals	3.0	1.6	.09
Nonconventional Goals	3.0	1.6	.14**

* Significant at the P=.05 level.
** Significant at the P=.01 level.

TABLE 3

CORRELATIONS OF PREDICTOR SCORES WITH EDUCATIONAL GROWTH FOR WOMEN

Predictor	Mean	S.D.	r with Independent Growth
CSOS PRETEST (N=310)			
Polit-Econ Conservatism	12.8	1.5	-.06
Dogmatism	34.6	4.1	-.04
Intolerance of Negro	19.2	6.7	-.08
Neg Orient to Society	9.7	2.6	-.15**
Relig Fundamentalism	14.6	0.7	.00
CSOS POSTTEST (N=326)			
Polit-Econ Conservatism	11.8	1.7	.02
Dogmatism	34.1	5.0	-.03
Intolerance of Negro	18.2	7.0	-.07
Neg Orient to Society	10.5	3.1	-.03
Relig Fundamentalism	14.5	0.9	.15**
ETS CSQ PRETEST (N=310)			
Motivation for Grades	26.9	4.9	.18**
Family Status	37.6	9.9	.07
Family Independence	18.7	4.9	-.03
Peer Independence	21.5	4.2	.02
Liberalism	23.4	4.0	-.04
Social Conscience	30.1	4.2	.10
Cultural Sophistication	22.3	4.6	.01
ETS CSQ POSTTEST (N=326)			
Control Test	16.9	4.7	.15**
Family Independence	19.0	4.7	.04
Peer Independence	21.6	4.3	.04
Liberalism	24.0	3.9	-.01
Social Conscience	29.6	4.8	.07
Cultural Sophistication	22.1	4.9	.02
Satisfact with Faculty	27.7	4.8	.17**
Satisfaction with Admin.	23.7	5.7	.17**
Satisfaction with Major	7.1	12.1	.01
Satisfaction with Students	29.0	4.1	.15**
Study Habits	25.1	3.9	.11*
Extra Curric Involvement	21.4	4.0	-.10*

TABLE 3 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
CUES PRETEST (N=310)			
Practicality	19.5	2.6	-.03
Community	25.4	2.5	.07
Awareness	20.7	4.8	.01
Propriety	23.2	2.9	.08
Scholarship	23.6	3.3	.10*
CUES POSTTEST (N=327)			
Practicality	19.2	2.8	.04
Community	22.8	4.2	.04
Awareness	14.9	5.5	.08
Propriety	20.7	3.7	.12*
Scholarship	16.9	5.6	.11*
CTMM (N=328)			
Logical Reasoning	29.0	4.8	.10*
Numerical Reasoning	15.6	4.4	.01
Verbal Concepts	17.2	4.3	.06
Memory	19.1	3.6	.10*
Language IQ	58.1	12.0	.09
Non-Language IQ	53.5	13.0	.06
Total IQ	58.5	12.2	.09
ENGLISH COMP TEST (N=322)	487.6	98.7	.13*
N-D READING (N=322)			
Vocabulary	42.5	13.1	.03
Comprehension	47.0	10.8	.05
Total	89.5	21.8	.04
Reading Rate	310.5	97.1	.01
STANDARDIZED BIBLE CONTENT TEST			
Pretest Total (N=322)	60.1	17.0	.09
Posttest Total (N-326)	71.8	16.8	.16
SSHA (N=322)			
Delay Avoidance	24.6	9.3	.11*
Work Methods	26.7	8.7	-.02
Study Habits	51.3	16.1	.05
Teacher Acceptance	33.4	7.8	.09

TABLE 3 (Continued

Predictor	Mean	S.D.	r with Independent Growth
Education Acceptance	31.7	6.7	.05
Study Attitudes	65.1	13.2	.08
Study Orientation	116.4	26.2	.07
WATSON-GLASER CTA PRETEST (N=322)			
Inference	11.6	2.7	.02
Recognition of Assumption	11.5	3.5	.06
Deduction	18.4	3.2	.05
Interpretation	18.2	2.9	.18**
Evaluation of Arguments	10.1	1.8	.07
Total	69.7	9.5	.11*
WATSON-GLASER POSTTEST (N=326)			
Inference	11.0	2.7	.15**
Recognition of Assumption	12.2	3.2	.11*
Deduction	19.0	3.2	.19**
Interpretation	18.4	3.3	.18**
Evaluation of Arguments	10.2	1.9	.09
Total	70.7	9.7	.22**
CPI (N=327)			
Femininity	52.2	10.5	.04
Flexibility	50.2	10.3	-.01
Self-Control	42.9	10.9	.15**
Responsibility	47.3	9.8	.19**
Tolerance	43.3	11.3	.13*
MMPI (N=327)			
Lie	50.1	6.9	.09
Deviant	55.8	9.8	-.25**
Denial	52.0	8.5	.09
Psychopathic Deviate	56.2	10.1	-.09
Masculinity-Femininity	47.8	10.2	-.08
Paranoia	54.5	9.3	-.08
Social Introversion	54.6	9.5	.02
ROKEACH SCALES (N=327)			
Authoritarianism	93.9	13.1	-.09
Dogmatism	125.8	16.8	-.07

TABLE 3 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
16 PF (N=328)			
Reserved--Outgoing	58.1	18.8	-.02
Less Intel--More Intel	53.1	19.1	.13*
Feelings--Emotion Stable	55.0	19.0	.03
Humble--Assertive	53.5	21.0	-.08
Sober--Happy-Go-Lucky	64.0	20.7	-.06
Expedient--Proper	69.6	20.8	.10*
Shy--Venturesome	54.8	21.1	-.07
Tough-mind--Tender-Mind	62.7	17.6	-.03
Trusting--Suspicious	53.9	18.6	-.04
Practical--Imaginative	59.5	16.9	-.02
Forthright--Shrewd	54.1	17.2	.04
Placid--Apprehensive	60.6	20.0	-.04
Conservative--Experiment	49.9	18.9	-.01
Group-Dep--Self-Suffic	58.1	18.0	.02
Casual--Controlled	53.5	19.0	.01
Relaxed--Tense	57.7	18.5	-.12*
Extroversion--Introvers	58.3	22.3	-.08
Anxiety--Adjustment	58.1	20.6	-.05
Alert Poise--Responsive	50.6	25.7	.01
Independence--Subduceness	51.9	20.0	-.06
Neurotic Trend	55.7	20.4	-.05
Leadership	56.0	20.2	.04
Creativity	53.4	20.2	.04
ACT PRETEST SPS GOALS SCALES (N=302)			
Academic Goals	6.9	.13	-.01
Vocational Goals	7.3	1.6	.03
Social Goals	5.6	1.8	.03
Nonconventional Goals	5.9	1.8	-.01

TABLE 3 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
ACT POSTTEST SPS GOALS SCALES (N=329)			
Academic Goals	2.7	1.5	.04
Vocational Goals	3.1	1.4	-.01
Social Goals	3.0	1.5	.07
Nonconventional Goals	2.9	1.7	.08

* Significant at the P=.05 level.
** Significant at the P=.01 level.

TABLE 4

CORRELATIONS OF PREDICTOR SCORES WITH EDUCATIONAL GROWTH FOR THE TOTAL GROUP

Predictor	Mean	S.D.	r with Independent Growth
CSOS PRETEST (N=605)			
Polit-Econ Conservatism	12.6	1.7	-.02
Dogmatism	34.9	4.2	-.01
Intolerance of Negro	19.5	6.7	-.05
Neg Orient to Society	9.9	2.7	-.11**
Relig Fundamentalism	14.5	0.8	.10*
CSOS POSTTEST (N=638)			
Polit-Econ Conservatism	11.6	2.0	.00
Dogmatism	34.3	5.5	.03
Intolerance of Negro	19.2	7.3	-.07
Neg Orient to Society	10.8	3.1	-.04
Relig Fundamentalism	14.3	1.2	.19**
ETS CSQ PRETEST (N=605)			
Motivation for Grades	25.7	5.3	.15**
Family Status	37.5	10.2	.03
Family Independence	19.3	4.7	-.03
Peer Independence	22.1	4.2	.09*
Liberalism	23.0	4.0	-.00
Social Conscience	28.9	4.7	.18**
Cultural Sophistication	21.4	4.9	.07
ETS CSQ POSTTEST (N=638)			
Control Test	17.5	4.8	.15**
Family Independence	19.8	5.0	-.06
Peer Independence	22.3	4.4	.01
Liberalism	23.6	4.2	.05
Social Conscience	28.4	5.3	.20**
Cultural Sophistication	21.5	5.0	.06
Satisfact with Faculty	27.1	5.0	.20**
Satisfaction with Admin	23.0	5.9	.19**
Satisfaction with Major	7.1	12.1	.01
Satisfaction with Students	28.2	4.2	.19**
Study Habits	24.8	4.1	.10*
Extra Curric Involvement	21.2	4.3	.05

TABLE 4 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
CUES PRETEST (N=605)			
Practicality	19.3	2.6	-.05
Community	25.0	2.8	.09*
Awareness	20.6	5.2	.04
Propriety	22.4	3.3	.13**
Scholarship	23.4	3.6	.11**
CUES POSTTEST (N=638)			
Practicality	19.0	2.8	.04
Community	21.9	4.3	.13**
Awareness	14.6	5.6	.09*
Propriety	19.6	4.1	.14**
Scholarship	16.3	5.9	.08*
CTMM (N=643)			
Logical Reasoning	30.0	5.0	.12**
Numerical Reasoning	16.5	4.5	.02
Verbal Concepts	17.3	4.3	.08*
Memory	19.3	3.4	.13**
Language IQ	59.5	12.1	.12**
Non-Language IQ	56.2	13.2	.08*
Total IQ	60.8	12.4	.12**
ENGLISH COMP TEST (N=632)	473.8	99.5	.14**
N-D READING (N=632)			
Vocabulary	42.7	13.2	.08*
Comprehension	47.1	10.9	.09*
Total	89.8	22.2	.09*
Reading Rate	310.9	95.6	.01
STANDARDIZED BIBLE CONTENT TEST			
Pretest Total (N=632)	59.7	18.8	.11**
Posttest Total (N=638)	71.5	19.3	.19**
SSHA (N=632)			
Delay Avoidance	23.3	9.4	.10*
Work Methods	25.7	9.0	.04
Study Habits	48.9	16.6	.08*
Teacher Acceptance	32.7	8.1	.11**

TABLE 4 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
Education Acceptance	30.6	7.0	.13**
Study Attitudes	63.3	14.0	.13**
Study Orientation	112.2	27.5	.11**
WATSON-GLASER CTA PRETEST (N=632)			
Inference	11.6	2.7	.10*
Recognition of Assumption	11.3	3.6	.07
Deduction	18.5	3.3	.12**
Interpretation	18.4	2.8	.16**
Evaluation of Arguments	10.2	1.8	.09*
Total	70.0	9.4	.16**
WATSON-GLASER POSTTEST (N=638)			
Inference	11.0	2.8	.16**
Recognition of Assumption	12.1	3.2	.08*
Deduction	19.0	3.3	.18**
Interpretation	18.4	3.2	.16**
Evaluation of Arguments	10.2	1.9	.09*
Total	70.8	10.1	.20**
CPI (N=638)			
Femininity	50.0	10.4	.04
Flexibility	49.1	10.8	.04
Self-Control	42.1	10.5	.12**
Responsiblity	45.5	10.8	.25**
Tolerance	42.5	11.2	.14**
MMPI (N=638)			
Lie	49.7	7.1	.06
Deviant	57.8	12.0	-.23**
Denial	51.9	8.4	.06
Psychopathic Deviate	58.0	10.9	-.14**
Masculinity-Femininity	53.1	11.7	-.03
Paranoia	54.8	10.1	-.12**
Social Introversion	54.1	9.7	-.03
ROKEACH SCALES (N=638)			
Authoritarianism	94.4	13.3	-.08*
Dogmatism	126.8	16.5	-.05

TABLE 4 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
16 PF (N=643)			
Reserved--Outgoing	56.7	20.1	-.03
Less Intel--More Intel	54.0	19.7	.13**
Feelings--Emotion Stable	55.1	20.1	.00
Humble--Assertive	52.6	20.8	-.07
Sober--Happy-Go-Lucky	62.2	21.3	-.08*
Expedient--Proper	67.3	20.8	.14**
Shy--Venturesome	54.1	21.6	-.04
Tough-mind--Tender-Mind	61.1	18.7	.05
Trusting--Suspicious	55.2	19.3	-.06
Practical--Imaginative	58.3	18.5	.04
Forthright--Shrewd	52.5	18.5	.02
Placid--Apprehensive	58.5	20.0	-.01
Conservative--Experiment	49.7	19.6	-.03
Group-Dep--Self-Suffic	58.0	18.9	.03
Casual--Controlled	55.8	19.9	-.01
Relaxed--Tense	56.4	19.4	-.03
Extroversion--Introvers	56.7	23.0	-.07
Anxiety--Adjustment	57.0	21.0	-.02
Alert Poise--Responsive	51.4	17.6	-.05
Independence--Subdueness	51.7	20.0	-.04
Neurotic Trend	55.2	21.5	.02
Leadership	56.4	21.0	.01
Creativity	54.0	20.6	.09*
ACT PREDEST SPS GOALS SCALES (N=597)			
Academic Goals	6.7	1.5	.06
Vocational Goals	7.2	1.6	.03
Social Goals	5.7	1.9	.01
Nonconventional Goals	5.7	2.0	-.00

TABLE 4 (Continued)

Predictor	Mean	S.D.	r with Independent Growth
ACT POSTTEST SPS GOALS SCALES (N=644)			
Academic Goals	2.6	1.5	.11**
Vocational Goals	2.9	1.4	.02
Social Goals	3.0	1.5	.08*
Nonconventional Goals	2.9	1.6	.11**

* Significant at the P=.05 level.
** Significant at the P=.01 level.

TABLE 5

CORRELATIONS OF SELF-REPORT DATA WITH EDUCATIONAL GROWTH FOR MEN

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
MARSH S & D PRETEST (N=315)				
6	Age	3.0	0.8	-.09
8	Dating-marital status	9.0	0.7	-.10*
9	Health	5.4	0.7	-.01
13	Religiousness in comp to parents	3.8	1.1	.05
14	Reasons for enrolling at college	8.0	2.0	.09
16	Acadcm probation expectations	3.7	0.8	.11*
17	Ownership-use of car	5.0	2.6	.13*
18	Smoking habits	8.4	1.5	.17**
19	Drinking habits	6.5	1.6	.11*
20	Church going habits	8.4	1.3	.15**
21	Chapel expectations	5.8	1.3	.21**
22	Bible reading practices	3.9	1.6	-.03
23	% of coll expenses to earn	3.9	2.3	.09
24	1st sem grade prospects	5.3	1.6	.10*
29	Ed level of father	4.2	2.0	.01
30	Ed level of mother	3.8	1.6	-.01
31	Home community population	4.4	1.9	-.00
32	Number in HS class	4.4	1.9	-.05
33	Overall HS GPA	5.0	1.9	.13

TABLE 5 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
34	Occ level of father	4.7	1.4	.16**
36	Family income	4.4	1.6	-.02
38	# of high school activities	4.3	1.9	.04
39	# of times elected HS officer	3.3	2.1	.00
40	HS athletic participation	4.4	2.7	-.03
46	Dating expectations	6.2	1.9	.04
47	Semester hour plans	5.9	1.1	.00
48	Hours per week expects to study	5.7	1.7	.12*
49	Times absent HS classes per sem	6.8	1.9	.11*
50	Classroom seating preference	6.0	1.9	.06
51	Part-time job hrs	2.2	1.6	.05
53	Most important thing in life	7.0	2.4	.13*
54	Income to live as would like	4.6	1.6	-.13*
55	Coll rules strictness	3.3	1.3	.11*
56	Attitude about dancing	6.0	2.7	.16**
57	Attitude about smoking	3.7	1.0	.09
58	Father's age when student born	4.7	1.6	.03
59	Attitude about other students	6.1	1.0	.11*
60	Consultation with HS teachers	3.2	1.0	.03
61	Attitude about cribbing	7.5	1.5	.12*
62	Attitude about petting	6.6	2.4	.17**
65	Belief about Heaven	8.4	1.8	.11*
66	Belief about the Bible	8.7	1.0	.01

TABLE 5 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
67	Belief about God	8.7	1.0	.09
68	Most important life goal	8.0	2.0	.19**
69	Practical-theoretical orientation	2.1	1.0	-.04
70	Number of close HS friends	6.6	2.1	-.01
71	How he sees himself	7.4	1.4	-.01
72	How others see him	5.5	1.6	.10*
73	Influence of religion on life	6.4	1.0	.23**
74	Relations with parents	8.0	1.5	.11*
75	Opinion on parental advice	4.7	1.7	.04
77	Opinion on marriage-divorce	6.4	1.0	.08
78	Belief about Jesus	2.8	2.1	-.04
SPECIALLY PREPARED POSTTEST ACT QUESTIONNAIRE (N=315)				
4	How many of 9 political accomplishments apply	1.0	1.8	.02
5	How many of 9 altruistic accomplishments apply	1.6	2.3	.09
6	How many of 8 speech accomplishments apply	0.5	1.2	.01
7	How many of 4 music performer accomplishments apply	0.9	0.4	.06
8	How many of 9 religious accomplishments apply	1.9	2.3	.10*

TABLE 5 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
26	Since coming to college are you rejecting former beliefs	2.1	0.7	.04
27	Is finding a suitable mate more important than a suitable occ	3.6	1.0	.07
28	Income expect to have 10 years after college	3.2	0.7	-.09
29	Satisfaction with the college	2.2	0.7	.15**
44	Progress in the cultural and literary area	2.0	0.6	-.11*
45	Progress in voc training	2.2	0.7	.02
46	Progress in acquiring background for further educ	1.9	0.7	-.02
47	Progress in understanding different philosophies and ways of life	2.0	0.7	.06
48	Progress in social development	1.8	0.6	-.04
49	Progress in understanding own self	1.6	0.6	-.06
50	Progress in citizenship	2.1	0.7	-.00
51	Progress in writing and speaking	1.9	0.7	-.03
52	Progress in critical thinking	1.9	0.6	-.03
53	Progress in developing an appreciation for the arts	2.3	0.7	.01
54	Progress in developing understanding and appreciation of sci and tech	2.2	.07	-.14**

TABLE 5 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
55	Progress in improving prospects for higher income professional status	2.0	0.7	.02
--	Leadership-achievements score	4.2	3.7	.12*
--	How many of 14 science activities apply	3.2	2.6	.05
--	How many of 10 humanities activities apply	4.9	2.4	.13*
--	How many of 10 social studies activities apply	5.9	2.0	.04
--	How many of 5 artistic accomplishments apply	4.8	2.0	.08
--	How many of 5 writing accomplishments apply	5.0	2.1	.10*

* Significant at the P=.05 level.

** Significant at the P=.01 level.

TABLE 6

CORRELATIONS OF SELF-REPORT DATA WITH EDUCATIONAL GROWTH FOR WOMEN

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
MARSH S & D PRETEST (N=329)				
6	Age	2.9	0.7	.02
8	Dating-marital status	8.8	0.7	-.04
9	Health	5.4	0.8	.03
13	Religiousness in comp to parents	4.1	1.0	.05
14	Reasons for enrolling at college	8.0	1.9	.03
16	Academ probation expectations	3.8	0.6	-.02
17	Ownership-use of car	7.0	2.0	.09
18	Smoking habits	8.9	0.5	.09
19	Drinking habits	7.1	1.2	.02
20	Church going habits	8.7	0.8	.02
21	Chapel expectations	6.3	1.0	.01
22	Bible reading practices	3.9	1.4	-.03
23	% of coll expenses to earn	2.4	1.8	.07
24	1st sem grade prospects	5.5	1.4	.16**
29	Ed level of father	4.4	1.9	.09
30	Ed level of mother	4.0	1.4	-.01
31	Home community population	4.8	2.1	.03
32	Number in HS class	4.7	1.9	-.01
33	Overall HS GPA	5.6	1.7	.1[illegible]**

TABLE 6 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
34	Occ level of father	4.5	1.5	.10*
36	Family income	4.5	1.6	-.05
38	# of high school activities	5.2	1.8	-.02
39	# of times elected HS officer	3.8	2.2	.02
40	HS athletic participation	2.6	1.7	-.00
46	Dating expectations	7.2	1.4	-.08
47	Semester hour plans	5.8	1.2	.05
48	Hours per week expects to study	5.6	1.7	.20**
49	Times absent HS classes per sem	6.4	1.7	.05
50	Classroom seating preference	6.4	1.7	.10*
51	Part-time job hrs	1.7	1.2	.08
53	Most important thing in life	7.6	1.8	.05
54	Income to live as would like	3.8	1.6	-.07
55	Coll rules strictness	3.3	1.3	.10*
56	Attitude about dancing	6.6	2.1	-.00
57	Attitude about smoking	4.0	0.9	.06
58	Father's age when student born	4.8	1.5	.05
59	Attitude about other students	6.3	0.8	.02
60	Consultation with HS teachers	3.3	1.0	-.08
61	Attitude about cribbing	7.8	1.2	.12*
62	Attitude about petting	7.7	1.6	-.05
65	Belief about Heaven	8.7	1.2	-.04
66	Belief about the Bible	8.9	0.4	-.02

TABLE 6 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
67	Belief about God	8.9	0.6	-.02
68	Most important life goal	8.4	1.7	.02
69	Practical-theoretical orientation	2.2	1.0	-.01
70	Number of close HS friends	6.0	2.0	-.06
71	How he sees himself	7.3	1.2	-.05
72	How others see him	6.0	1.4	.04
73	Influence of religion on life	6.7	0.7	.06
74	Relations with parents	8.0	1.6	-.03
75	Opinion on parental advice	5.0	1.5	-.04
77	Opinion on marriage-divorce	6.6	0.7	-.08
78	Belief about Jesus	2.8	0.7	-.03
SPECIALLY PREPARED POSTTEST ACT QUESTIONNAIRE (N=329)				
4	How many of 9 political accomplishments apply	0.7	1.2	-.10*
5	How many of 9 altruistic accomplishments apply	1.9	2.2	-.05
6	How many of 8 speech accomplishments apply	0.3	1.2	-.05
7	How many of 4 music performer accomplishments apply	0.2	0.8	-.11*
8	How many of 9 religious accomplishments apply	2.1	2.1	.02

TABLE 6 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
26	Since coming to college are you rejecting former beliefs	2.2	0.6	.07
27	Is finding a suitable mate more important than a suitable occ	3.0	1.0	.03
28	Income expect to have 10 years after college	1.9	0.9	-.10*
29	Satisfaction with the college	2.5	0.7	.18**
44	Progress in the cultural and literary area	2.0	0.6	.01
45	Progress in voc training	2.3	0.7	.05
46	Progress in acquiring background for further educ	2.1	0.7	-.11*
47	Progress in understanding different philosophies and ways of life	2.0	0.7	-.04
48	Progress in social development	1.5	0.6	-.01
49	Progress in understanding own self	1.5	0.6	-.04
50	Progress in citizenship	2.2	0.6	-.02
51	Progress in writing and speaking	1.9	0.6	-.13*
52	Progress in critical thinking	1.9	0.6	.02
53	Progress in developing an appreciation for the arts	2.0	0.7	-.04
54	Progress in developing understanding and appreciation of sci and tech	2.4	0.7	-.12*

TABLE 6 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
55	Progress in improving prospects for higher income professional status	2.2	0.7	.01
--	Leadership-achievements score	3.6	3.0	.05
--	How many of 14 science activities apply	1.9	2.0	-.07
--	How many of 10 humanities activities apply	6.3	2.0	-.05
--	How many of 10 social studies activities apply	5.2	2.0	-.11*
--	How many of 5 artistic accomplishments apply	4.9	2.0	.05
--	How many of 5 writing accomplishments apply	5.2	2.0	-.00

* Significant at the P=.05 level.

** Significant at the P=.01 level.

TABLE 7

CORRELATIONS OF SELF-REPORT DATA WITH EDUCATIONAL GROWTH FOR THE TOTAL GROUP

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
MARSH S & D PRETEST (N=644)				
6	Age	3.0	0.7	-.05
8	Dating-marital status	8.7	0.7	-.07
9	Health	5.4	0.8	.01
13	Religiousness in comp to parents	4.0	1.1	.06
14	Reasons for enrolling at college	8.0	2.0	.07
16	Academ probation expectations	3.8	0.7	.06
17	Ownership-use of car	6.0	2.5	.13**
18	Smoking habits	8.6	1.2	.16**
19	Drinking habits	6.8	1.4	.09*
20	Church going habits	8.6	1.1	.11**
21	Chapel expectations	6.1	1.2	.15**
22	Bible reading practices	3.9	1.5	-.03
23	% of coll expenses to earn	3.2	2.2	.05
24	1st sem grade prospects	5.4	1.5	.12**
29	Ed level of father	4.3	2.0	.05
30	Ed level of mother	3.9	1.5	-.01
31	Home community population	4.7	2.0	.02
32	Number in HS class	4.6	1.9	-.03
33	Overall HS GPA	5.3	1.8	.15**

TABLE 7 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
34	Occ level of father	4.6	1.4	.07
36	Family income	4.5	1.6	-.04
38	# of high school activities	4.8	1.9	.03
39	# of times elected HS officer	3.5	2.2	.02
40	HS athletic participation	3.5	2.4	-.05
46	Dating expectations	6.7	1.7	.02
47	Semester hour plans	5.3	1.2	.02
48	Hours per week expects to study	5.7	1.7	.15**
49	Times absent HS classes per sem	6.6	1.9	.07
50	Classroom seating preference	6.3	1.8	.08*
51	Part-time job hrs	2.0	1.4	.04
53	Most important thing in life	7.3	2.1	.11**
54	Income to live as would like	4.2	1.7	-.12**
55	Coll rules strictness	3.3	1.3	.11**
56	Attitude about dancing	6.3	2.4	.10*
57	Attitude about smoking	3.9	0.9	.09*
58	Father's age when student born	4.7	1.6	.04
59	Attitude about other students	6.2	1.0	.08*
60	Consultation with HS teachers	3.3	1.0	-.01
61	Attitude about cribbing	7.7	1.3	.13**
62	Attitude about petting	7.1	2.1	.11**
65	Belief about Heaven	8.6	1.5	.06
66	Belief about the Bible	8.8	0.7	.01

TABLE 7 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
67	Belief about God	8.8	0.8	.06
68	Most important life goal	8.2	1.9	.12**
69	Practical-theoretical orientation	2.2	1.0	-.02
70	Number of close HS friends	6.3	2.1	-.04
71	How he sees himself	7.4	1.3	-.04
72	How others see him	5.8	1.5	.09*
73	Influence of religion on life	6.5	1.0	.18**
74	Relations with parents	8.0	1.6	.04
75	Opinion on parental advice	4.8	1.6	.01
77	Opinion on marriage-divorce	6.5	0.8	.02
78	Belief about Jesus	2.8	0.7	-.04
SPECIALLY PREPARED POSTTEST ACT QUESTIONNAIRE (N=644)				
4	How many of 9 political accomplishments apply	0.9	1.5	-.06
5	How many of 9 altruistic accomplishments apply	1.7	2.3	.04
6	How many of 8 speech accomplishments apply	0.4	1.2	-.02
7	How many of 4 music performer accomplishments apply	0.2	0.6	-.03
8	How many of 9 religious accomplishments apply	2.0	2.2	.07

TABLE 7 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
26	Since coming to college are you rejecting former beliefs	2.1	0.6	.06
27	Is finding a suitable mate more important than a suitable occ	3.3	1.1	.03
28	Income expect to have 10 years after college	2.5	1.1	-.11**
29	Satisfaction with the college	2.3	0.7	.17**
44	Progress in the cultural and literary area	2.0	0.6	-.06
45	Progress in voc training	2.2	0.7	.04
46	Progress in acquiring background for further educ	2.0	0.7	-.05
47	Progress in understanding different philosophies and ways of life	2.0	0.7	.01
48	Progress in social development	1.6	0.6	-.04
49	Progress in understanding own self	1.6	0.6	-.06
50	Progress in citizenship	2.2	0.7	-.00
51	Progress in writing and speaking	1.9	0.6	-.07
52	Progress in critical thinking	1.9	0.6	-.01
53	Progress in developing an appreciation for the arts	2.2	0.7	-.02
54	Progress in developing understanding and appreciation of sci and tech	2.3	0.7	-.12**

TABLE 7 (Continued)

Item	Topic	Item Response Mean	Item Response S.D.	r with Independent Growth
55	Progress in improving prospects for higher income profession status	2.1	0.7	.02
--	Leadership-achievements score	3.9	3.4	.09*
--	How many of 14 science activities apply	2.5	2.4	-.02
--	How many of 10 humanities activities apply	5.6	2.3	.08*
--	How many of 10 social studies activities apply	5.5	2.0	-.04
--	How many of 5 artistic accomplishments apply	4.9	2.0	.07
--	How many of 5 writing accomplishments apply	5.1	2.0	.06

* Significant at the P=.05 level.

** Significant at the P=.01 level.

TABLE 8

SUMMARY OF STEPWISE REGRESSION MULTIPLE COMPUTER ANALYSES FOR THE TOTAL GROUP[a]

	Significant Predictors	R	Increase in R	F to Enter or Remove[b]
A. PREDICTORS WERE CTMM 1-7 & 16PF 1-23 (N=643)	16PF G	.14	--	12.13
	CTMM Log reason	.19	.05	10.56
	16PF B	.20	.02	4.48
B. PREDICTORS WERE N-D READ, CEEB ECT, SSHA 1-7, & THE PRETESTS FOR W-G CATA 1-6 & STANDARDIZED BIBLE TOTAL (N=632)	W-G Total	.16	--	16.47
	SSHA Ed Accept	.19	.03	7.98
C. PREDICTORS WERE ROKEACH AUTHORIT & DOGMAT, MMPI 1-7, CPI 1-5, & THE POST-TESTS FOR CUES 1-5 (N=638	CPI Re	.25	--	41.13
	MMPI F	.28	.03	10.77
D. PREDICTORS WERE THE PRETESTS FOR CSOS 1-5, CSQ 1-7, & CUES 1-5 (N=605)	CSQ SC	.18	--	19.14
	CSQ MG	.20	.03	6.58
	CSQ PI	.23	.02	6.03
	CUES Propriety	.24	.01	3.98
E. PREDICTORS WERE THE POSTTESTS FOR WG CTA 1-6, STANDARDIZED BIBLE TOTAL, CSQ 1-12, & CSOS 1-5 (N=638)	CSQ SC	.20	--	26.95
	CSOS R	.25	.05	15.20
	W-G Total	.28	.03	11.93
	CSQ SA	.31	.03	10.76
	CSQ SS	.32	.01	4.09

TABLE 8 (Continued)

	Significant Predictors	R	Increase in R	F to Enter or Remove
F. PREDICTORS WERE MARSH S & D PRETEST ITEMS 6, 8-25, & 28-39 (N=643)	Item 18 Smoking	.16	--	16.42
	Item 33 HS GPA	.20	.04	8.82
	Item 17 Auto	.22	.03	7.43
	Item 8 Dating	.24	.02	6.73
	Item 21 Chapel	.26	.02	6.41
	Item 34 Father's occ	.28	.02	6.19
	Item 23 Earn exp	.29	.01	5.13
	Item 22 Bible	.30	.01	4.60
G. PREDICTORS WERE MARSH S & D PRETEST ITEMS 40, 46-62, & 65-78 (N=643)	Item 73 Relig.	.18	--	20.78
	Item 48 Work	.22	.04	11.52
	Item 54 Income to live as like	.23	.01	4.21
H. PREDICTORS WERE 26 ACT SPECIAL POST-TEST QUESTIONNAIRE ITEMS (N=644)	Item 29 Satisfaction with this college	.17	--	18.72
	Item 54 Progress in sci & tech	.20	.03	8.27
	Expected income ten years after college	.23	.03	8.31
	Nonconventional goals	.25	.02	5.34

a The criterion was Independent Educational Growth.

b $\alpha = .05$.

TABLE 9

SUMMARY OF THE FINAL STEPWISE REGRESSION ANALYSIS FOR THE TOTAL GROUP[a]

Variables in the Equation	Final Reg Coef.[b]	R Steps	Std Error	F to Enter or Remove
CSQ2-SA	0.068	.207	.019	26.466
CSQ1-SC	0.077	.260	.022	15.670
CSQ2-SS	0.065	.287	.026	9.458
CSQ1-PI	0.055	.306	.025	7.368
Special ACT Questionnaire Item 54 on sci & tech	-0.306	.319	.139	5.321
CPI-To	-0.226	.330	.104	4.638
WG1-Interp	0.081	.340	.037	4.647

a The criterion was Independent Educational Growth.

b Regression constant = -3.492